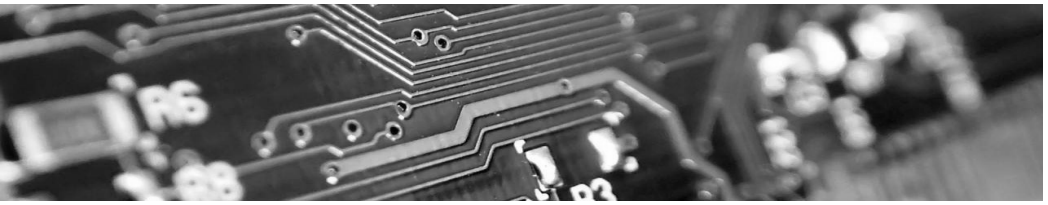
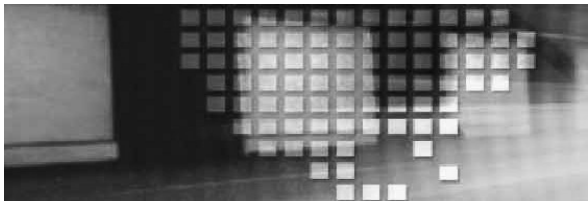
PZ1E / PZ2E / PZ3E Administration Guide





V1.1
March 2014
Alain Ganuchaud

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1 GENERAL INFORMATION

1.1 System Overview

This documentation describes the zabbix proxy designed by CORE IT PROJECT. The proxy is produced in 3 boxes: 1 ethernet, 2 ethernet or 3 ethernet, see other hardware items in paragraph Product Description.

A Zabbix proxy is the ideal solution for centralized monitoring of:

- remote locations
- branches
- secured networks
- with zero administration

Main Features

Embedded Debian 6.0
Whole configuration with Web Interface
Lowcost (from 200 euros)
Zero Admin Solution
Provide main 1.8, 2.0 & 2.2 Zabbix versions
Option Installation Assistance
Option Remote Support

Product Description

Embedded Debian 6.0
ReadOnly Unbreakable FS
Backend Database SQLite3
Compiled Zabbix Proxy with :

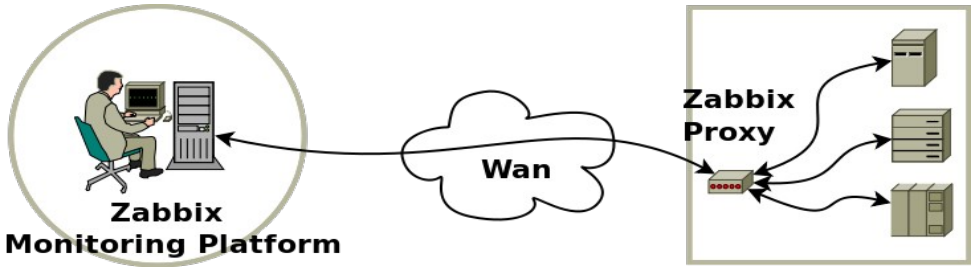
- Zabbix Agent
- Zabbix Java Gateway
- Zabbix ssh Agent
- Zabbix IPMI Agent
- Zabbix SNMP Agent
- Zabbix Web Monitoring Agent
- Zabbix Databases Agents: MYSL, DB2, Postgresql, Oracle & MSSQL
- Zabbix ESX Agent
- SNMP Traps

Supported 1.8 versions : 1.8.13 → 1.8.last
Supported 2.0 versions : 2.0.0 → 2.0.last
Supported 2.2 versions : 2.2.0 → 2.2.last
Recommended max load : 30 items/s
CPU AMD GEODE LX800
RAM 256MB - Storage 4GB
2 mini PCI - 2 USB - 1 serial DB9
1, 2 or 3 Ethernet 10/100
Low Power
Reliable Hardware
1 Eth: 100x160x25 mm
2/3 Eth : 160x160x25 mm
Warranty 1 year
Support & updates provided during 1 year

Applications

Monitoring remote sites
Monitoring secured networks
Lighten the load of Zabbix server
Centralize the monitoring
JVM, SNMP, Databases & ESX Monitoring out of the Box

Architecture



Licence

All programs developed by CORE IT PROJECT contained in the Proxy box are free softwares; you can redistribute them and/or modify them under the terms of the GNU General Public License as published by the Free Software Foundation; either version 2 of the License, or (at your option) any later version.

See the GNU General Public License for more details.

1.2 Hardware

Hardware is based on Alix boxes, see *www.**pcengines**.ch for details.*

1.2.1 CE Declaration of Conformity

We, PC Engines GmbH, declare that ALIX.2, ALIX.3 and ALIX.6 series boards, when installed in PC Engines metal enclosures. (case1c1 / case1c2 / box2c), are in conformance with:
- EN 61000-6-3 (2005) (emissions, residential and industrial)
- EN 61000-6-2 (ESD, susceptibility, residential and industrial)

The unit under test is in conformity with the standards mentioned above. A copy of the test report will be provided on request.
ALIX system board 5 5/5/2010

1.2.2 Compliance information

For FCC, ALIX has been tested as a CPU board, installed in an enclosure, with the top cover removed. No further testing should be required if the board is used with other FCC tested modular components. Please see http://www.fcc.gov/oet/ for more details. The responsible party for FCC is the importer.
Testing for CE mark must be done at the level of the complete product, possibly including the wireless cards. Please contact PC Engines for assistance and documentation.
For satisfactory resistance to electrostatic discharge events (ESD), the ALIX board should be grounded (e.g. through the mounting holes, or the serial port connector). The USB port on ALIX.2B / ALIX.3B boards is sensitive to ESD events, spurious overcurrent events may be detected in this version.

1.2.3 Recycling / disposal

Do not discard electronic products in household trash!
All waste electronics equipment should be recycled according to local regulations.
Information for the recycler:
Please cut off Lithium battery, if present, for separate recycling.
PC Engines enclosures are made of aluminium.
ALIX system board 6 5/5/2010

1.2.4 Introduction / features

PC Engines ALIX boards are small form factor system boards optimized for wireless routing and network security applications.
· AMD Geode LX CPU, 433 Mhz (LX700) or 500 MHz (LX800) 5x86 CPU,
· 256 KB cache (64K data + 64K instruction + 128K L2)
· 1 to 3 Ethernet channels (Via VT6105M, 10 / 100 Mbit/s)
· 1 or 2 miniPCI sockets for 802.11 wireless cards and other expansion
· 1 miniPCI Express socket for GSM / UMTS cards (ALIX.6)
· 128 or 256 MB DDR SDRAM, 64 bit wide for high memory bandwidth
· 512 KB flash for PC Engines tinyBIOS
CompactFlash + optional 44 pin IDE header for user's operating system and application
· 7 to 18V (absolute maximum) DC supply through DC jack or passive power over Ethernet
· 1 serial port (DB9 male, RXD / TXD only)
· 2 USB 2.0 ports (optional)
· Header for LPC bus (use for flash recovery or I/O expansion)

1.3 Software

Software is based on :

- Linux Debian
- Readonly Filesystems structure mainly inspired from http://code.google.com/p/debian-for-alix As a consequence, the system is unbreakable, imute to virus and can be power off like a lamp.
- OpenVPN for the crypted connection between the proxy and the server
- Zabbix software, Zabbix SIA is a company registered in Latvia, owns the Zabbix trademark.
- CORE IT software (mainly Webmin modifications and add-ons for easy administration purpose), CORE IT PROJECT is a company registred in France.

Linux Debian version	Zabbix version	Proxy Box version (embedded by Core IT)
Debian 6.0.4 Squeeze	1.8.13 1.8.14 1.8.15 2.0.0 2.0.1 2.0.2 2.0.3	V.0.1 – first version 2012 Oct 10
Debian 6.0.4 Squeeze	1.8.13 1.8.14 1.8.15 2.0.0 2.0.1 2.0.2 2.0.3	V.0.2 – minor doc addons 2012 Nov 10
Debian 6.0.4 Squeeze	1.8.13 1.8.14 1.8.15 2.0.0 2.0.1 2.0.2 2.0.3	V.0.3 – dump & vpn modules addon 2012 Dec 5
Debian 6.0.4 Squeeze Feb 3rd Update	1.8.13 1.8.14 1.8.15 2.0.0 2.0.1 2.0.2 2.0.3 2.0.4 2.0.5	V1.0 – second major release 2013 Feb 8 - Add crypted connection with Zabbix Server - Add ESX Monitoring - Add Databases Monitoring for Oracle, DB2, MYSQL, Postgresql & MSSQL Server - Add JVM monitoring - Add SNMP Traps - Add dump facility - Add Zabbix 2.0.4 & 2.0.5 updates - Add related monitoring Zabbix templates - Add extended FS up to 4GB
Debian 6.0.4 Squeeze Feb 3rd Update	1.8.13 1.8.14 1.8.15 2.0.0 2.0.1 2.0.2 2.0.3 2.0.4 2.0.5 2.2.0 2.2.2	V1.1 2014 Feb 10

2 GETTING STARTED

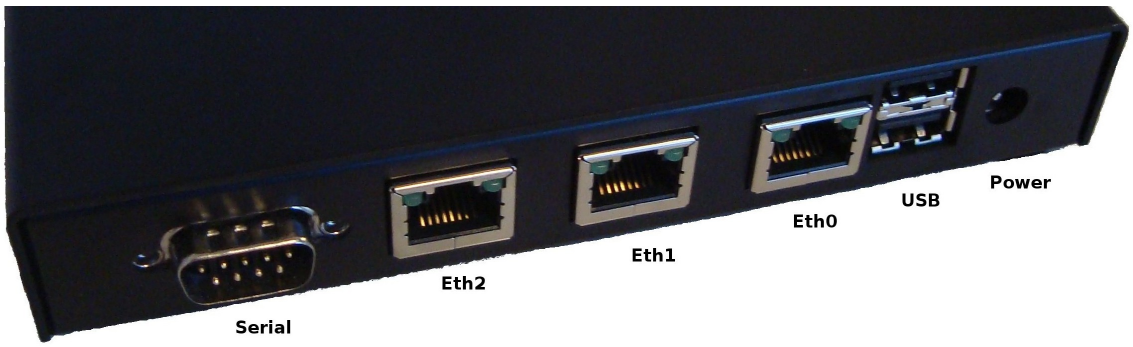
Below is the configuration sequence, proceed in this order, step by step:

1. Connect the needed cables
2. Change the TCP/IP parameters
3. Change the passwords
4. Reboot the proxy to post the changes on the readonly Filesystem.
5. Change the Zabbix parameters
    1. version
    2. proxy
    3. agent
    4. java
6. Configure the crypted connection between Proxy and zabbix server
7. Configure the monitoring plugins:
    1. Databases monitoring: Oracle, DB2, MYSQL, MSSQL & Postgresql
    2. ESX monitoring
    3. SNMP Traps
8. Reboot the proxy to check configuration is OK and saved.

2.1 Proxy Cabling

Connect your proxy box with the following cables:

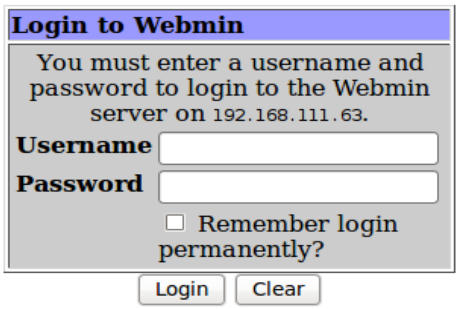
- power cable
- ethernet cable on eth0 (connector close to USB connectors)
- serial cable (not mandatory)



2.2 Logging On

Connect your favorite browser to the following URL:
http://192.168.111.63

username: admin
paswword: coreit.fr



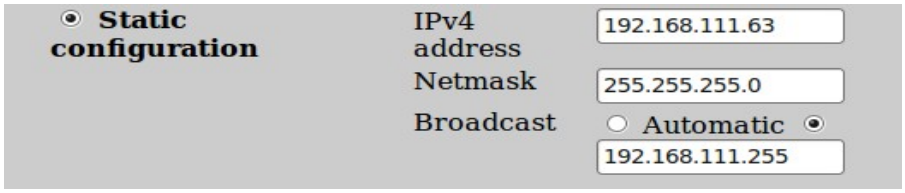
2.3 Configure TCP/IP parameters

Click on the Networking Tab and then on the Network configuration icon.

Change the TCP/IP parameters according your network.

2.3.1 Network interfaces

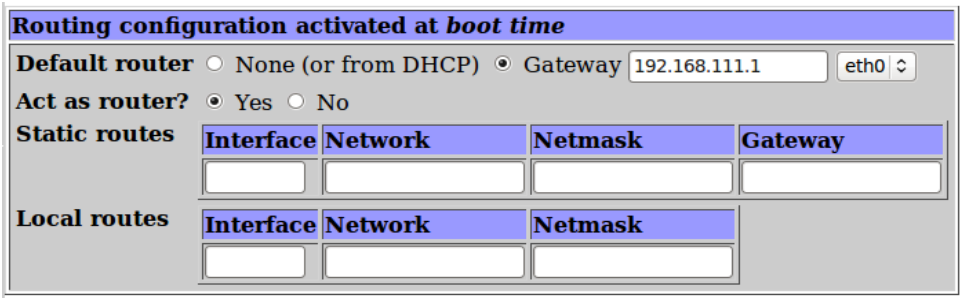
Through Network interfaces icon, change eth0 IP address and mask, we recommend static IP configuration for your proxy.



Save Save your configuration.

2.3.2 Routing and Gateways

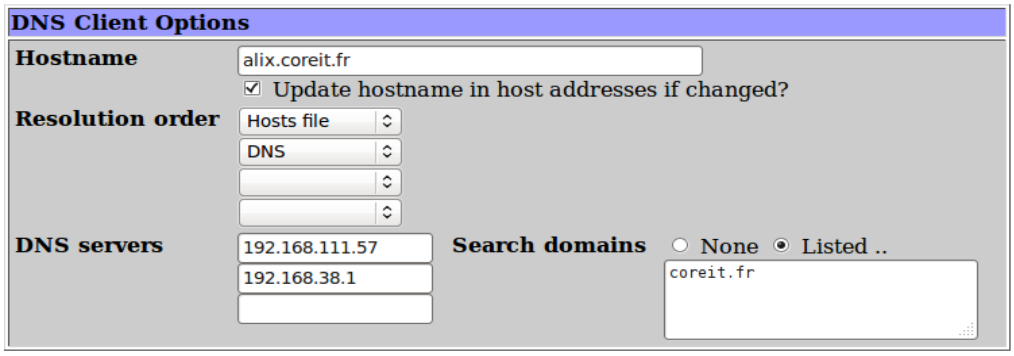
Through Routing and gateways icon, change default gateway and add routes if needed.

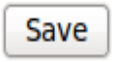


Save Save your configuration.

2.3.3 Hostname and DNS Client

Through Hostname and DNS Client, change hostname, domain and DNS servers.

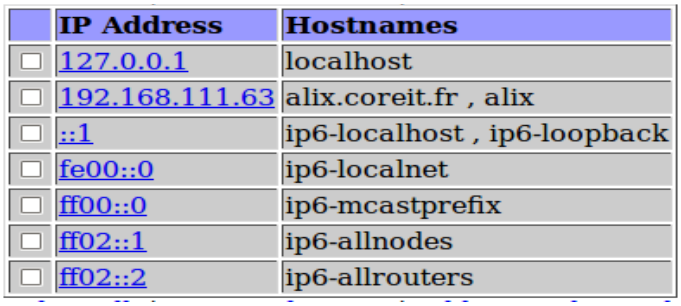




Save your configuration.

2.3.4 Host Adresses

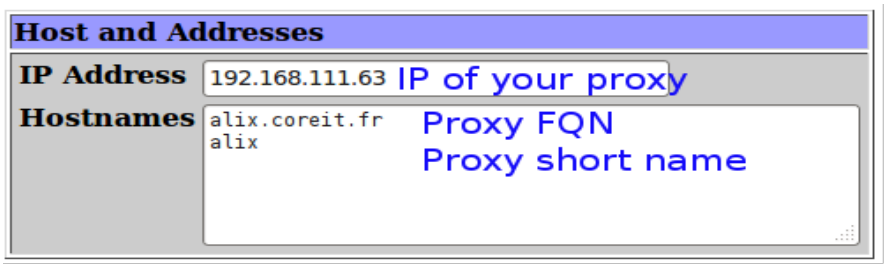
Through Host adresses, change hosts info according your previous changes.

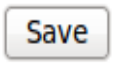


	IP Address	Hostnames
☐	127.0.0.1	localhost
☐	192.168.111.63	alix.coreit.fr , alix
☐	::1	ip6-localhost , ip6-loopback
☐	fe00::0	ip6-localnet
☐	ff00::0	ip6-mcastprefix
☐	ff02::1	ip6-allnodes
☐	ff02::2	ip6-allrouters

Update the Hosts file (local name resolution), change the default IP with your proxy's IP and configure the Fully Qualified Name & Short Name (alias).

Example:
192.168.0.25 proxyname.mydomain.myorg proxyname

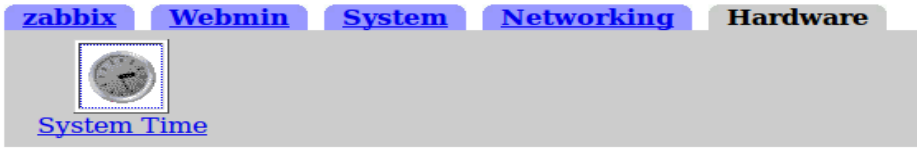




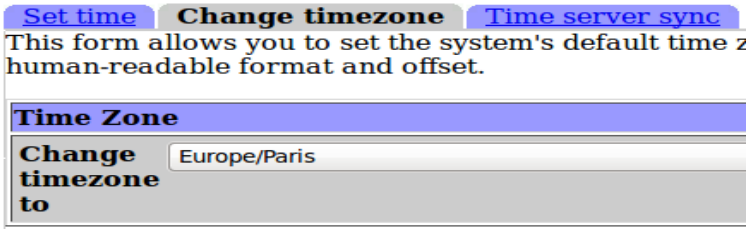
Save your configuration.

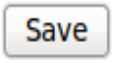
2.4 Configure Time zone

Go to the System Time Tab and Hardware icon.



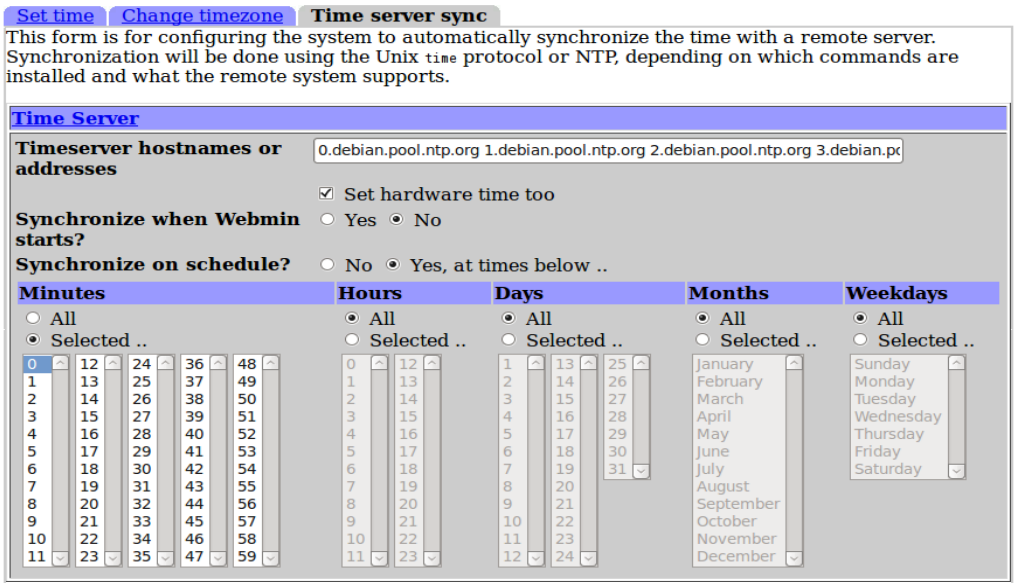
Configure the appropriate Time zone.

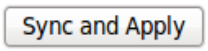




Save your configuration.

Configure your ntp servers (could be internal ones). We recommend you schedule the synchronization regularly and synchronize the hardware clock like on the below screenshot.





Sync and Apply your configuration.

2.5 Change the passwords

The proxy box is configured with the following passwords:

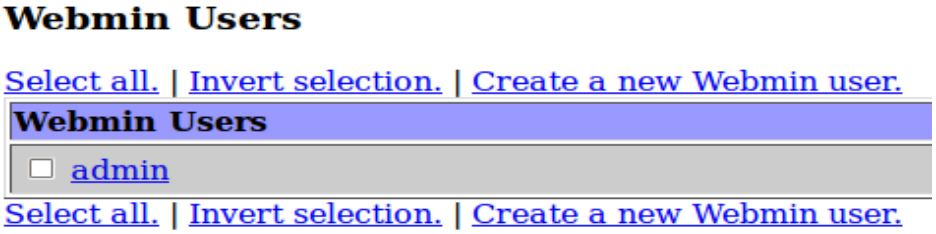
- Linux root : coreit.fr
- Webmin admin : coreit.fr

As those passwords are the same for all the proxy boxes, we strongly recommend you change them.

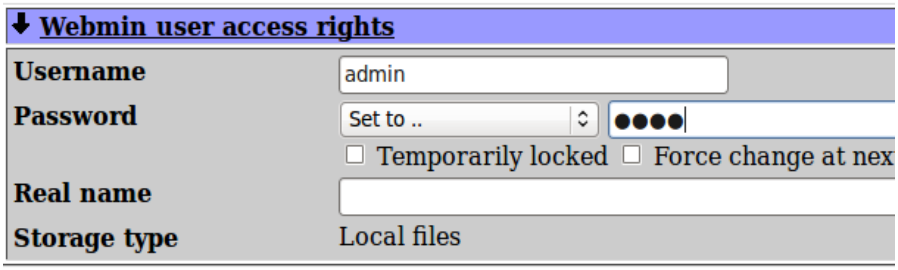
2.5.1 Change the Webmin password

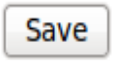
Go to the Webmin Tab and Webmin Users icon.

Click on admin user.


Webmin Users
Select all. | Invert selection. | Create a new Webmin user.
Webmin Users
admin
Select all. | Invert selection. | Create a new Webmin user.

And change the admin password.

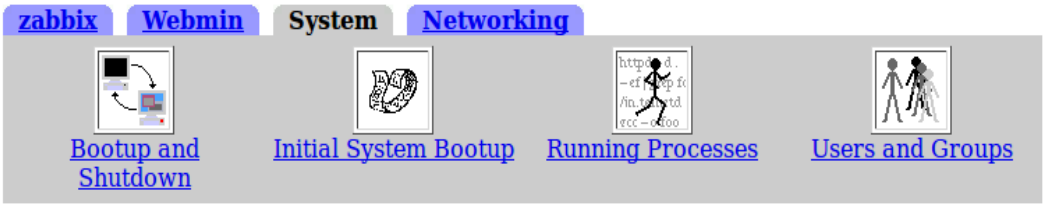




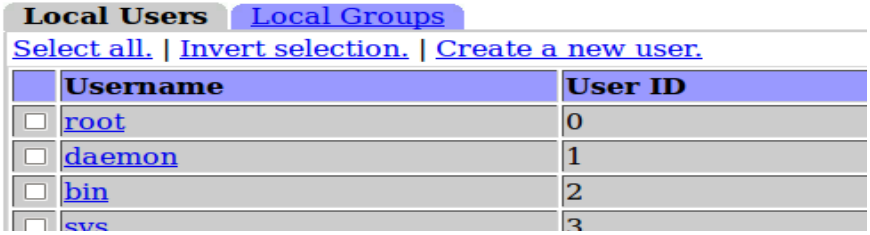
Save your configuration.

2.5.2 Change the Linux root password

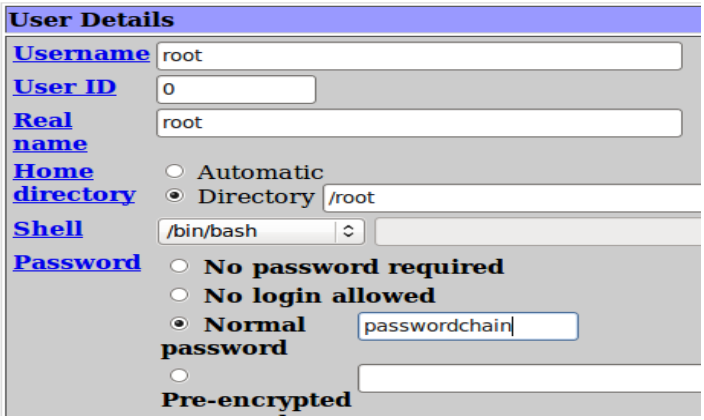
Go to the System Tab and users and groups icon.

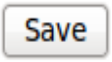


Click on root user.



And change the root password.

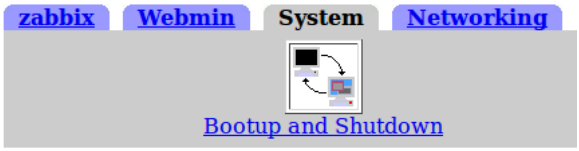




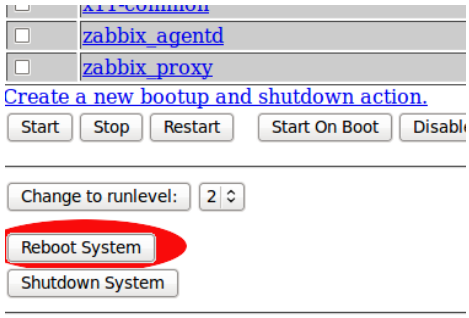
Save your configuration.

At this level, your configuration is active, but if you power off your proxy, all changes will be lost. You need to post the update on the read-only Filesystem. You do so by rebooting the proxy by the Reboot button. All other reboot methods will NOT update the readonly Filesystem.

Go to System tab and Bootup and Shutdown icon.



Go the end of the page and press the Reboot System Button.



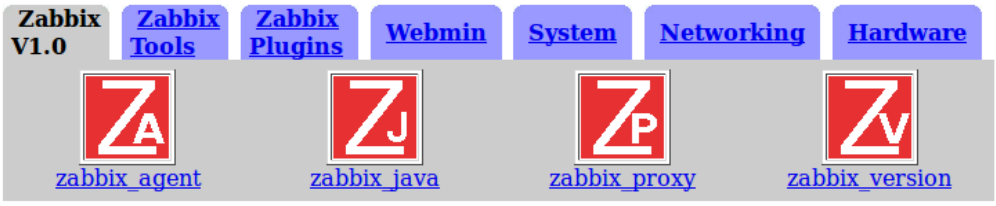
Reconnect your browser to the new URL, for example:

http://192.168.0.25

username: admin
paswword: newpasswordchain

2.6 Configure zabbix settings

Go to the Zabbix Tab.



2.6.1 Select your zabbix version

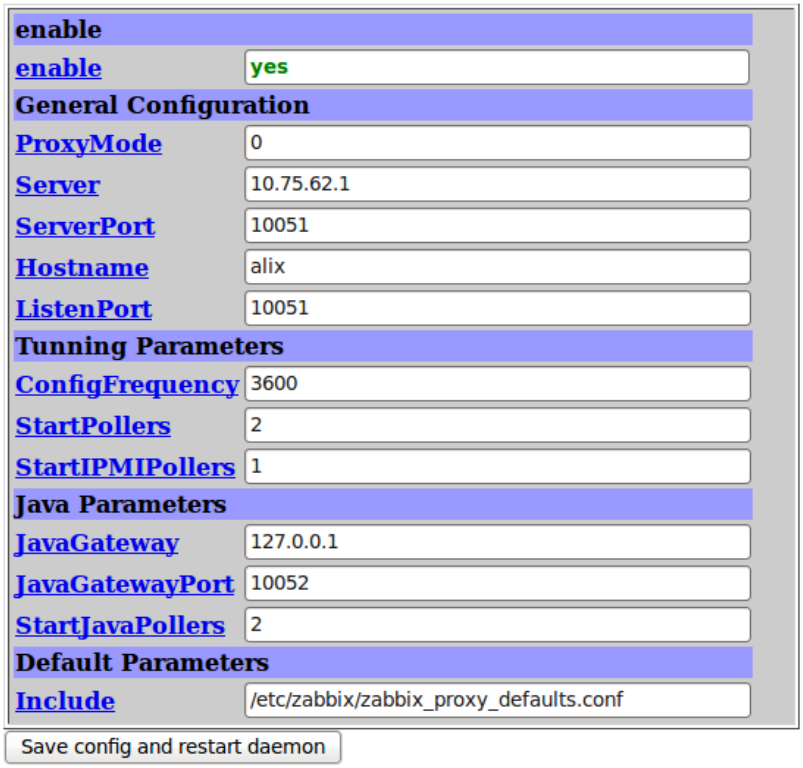
Go to zabbix version icon, in the following example, version 2.0.5 will be configured.

Remember that the zabbix proxy and the zabbix server must have the same Major release, for example:

- **Proxy 2.2.x is compatible with Server 2.2.x**
- **Proxy 2.0.5 is compatible with Server 2.0.2**
- **Proxy 1.8.14 is not compatible with Server 2.0.4**
- **Proxy 1.8.13 is compatible with Server 1.8.14**

2.6.2 Configure zabbix proxy parameters

Go to zabbix proxy icon and configure the parameters according your zabbix network.
Clicking on the name of the parameter will return you an online help.



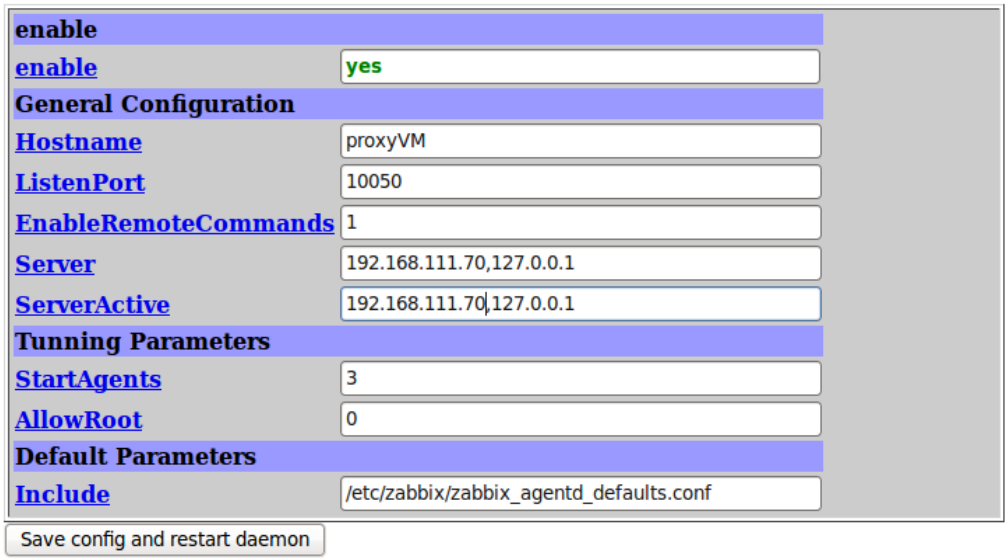
Only main proxy parameters are configurable by frontend, other parameters must be configured via root ssh session, they are located in /etc/zabbix.

ProxyOfflineBuffer=1 is the only configuration supported on Hardware version for this parameter.

Take care, if you enable the crypted connection between the Zabbix proxy and the Zabbix server, then the Server IP must be the one used in the VPN subnet (see Zabbix_vpn module).

2.6.3 Configure zabbix agent parameters

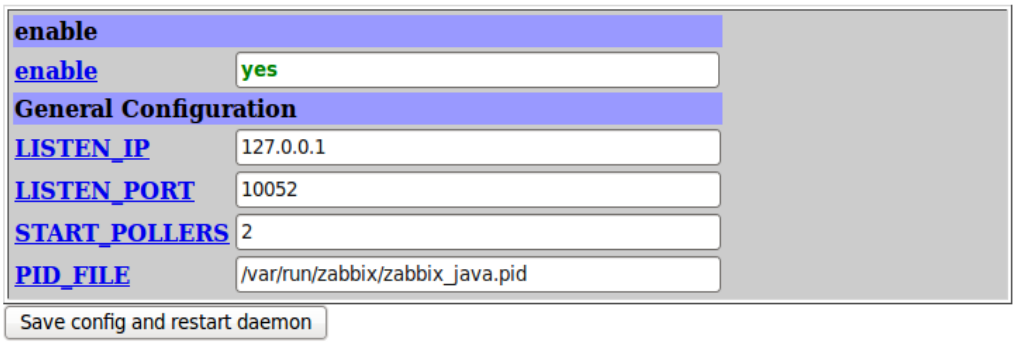
Go to zabbix agent icon and configure the parameters according your zabbix network.
Clicking on the name of the parameter will return you an online help.



Only main agent parameters are configurable by frontend, other parameters must be configured via root ssh session, they are located in /etc/zabbix.

2.6.4 Configure zabbix java parameters

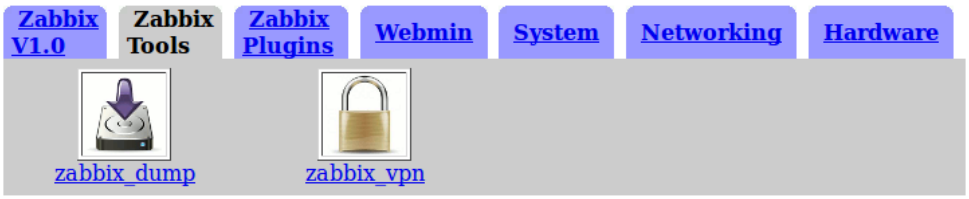
Go to zabbix java icon and configure the parameters according your zabbix network.
Clicking on the name of the parameter will return you an online help.



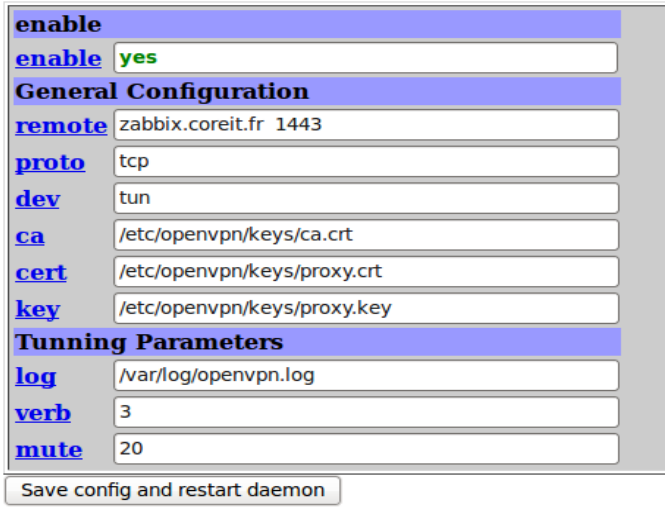
CAUTION
JVM Monitoring is only supported with Zabbix versions 2.0.x.

2.7 Configure Crypted Connection

Go to the Zabbix Tools Tab. This configuration is not mandatory if you do not want crypted connection between Zabbix server and Zabbix proxy; if you monitor a remote office over Internet via the proxy, we recommend this configuration.



Go to zabbix vpn icon and configure the parameters according your zabbix network. Clicking on the name of the parameter will return you an online help.

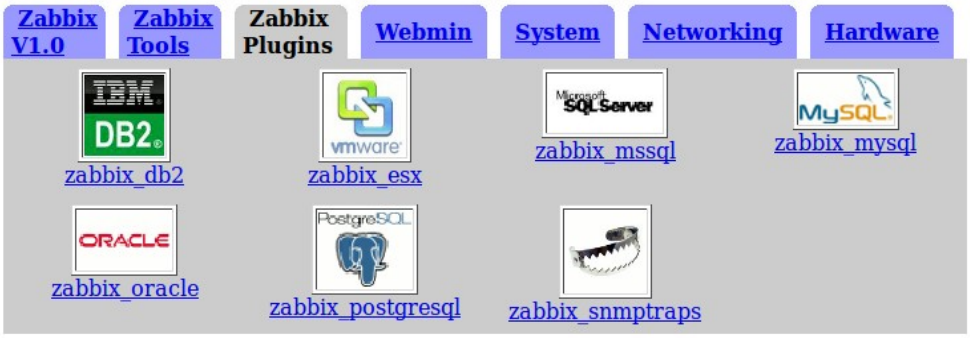


Zabbix_vpn is based on openvpn client (http://openvpn.net) , ie Zabbix server must be configured as an OpenVPN server. Please, take a look at OpenVPN HowTo to understand how to setup an OpenVPN server http://openvpn.net/index.php/open-source/documentation/howto.html

As proxy is based on debian, OpenVPN client was designed according the Debian OpenVPN Wiki http://wiki.debian.org/OpenVPN

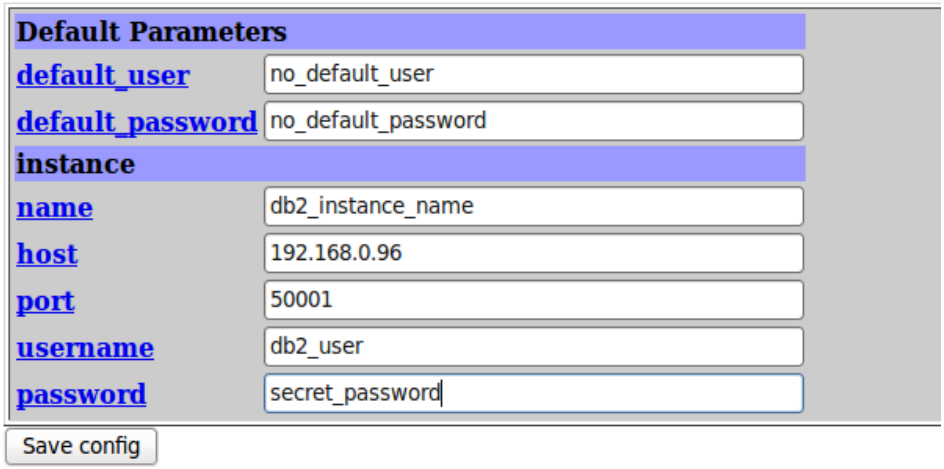
2.8 Configure Database Plugins

Go to Zabbix Plugins Tab.



2.8.1 Configure DB2 Monitoring parameters

Go to zabbix db2 icon and configure the parameters according your DB2 server. Clicking on the name of the parameter will return you an online help.



Templates Configuration
On Zabbix frontend, DB2 hosts must be configured with two templates:
- T_DB2_INSTANCE Template that contains DB2 Instance monitoring.
- T_DB2_DATABASE Template that contains DB2 Database monitoring.

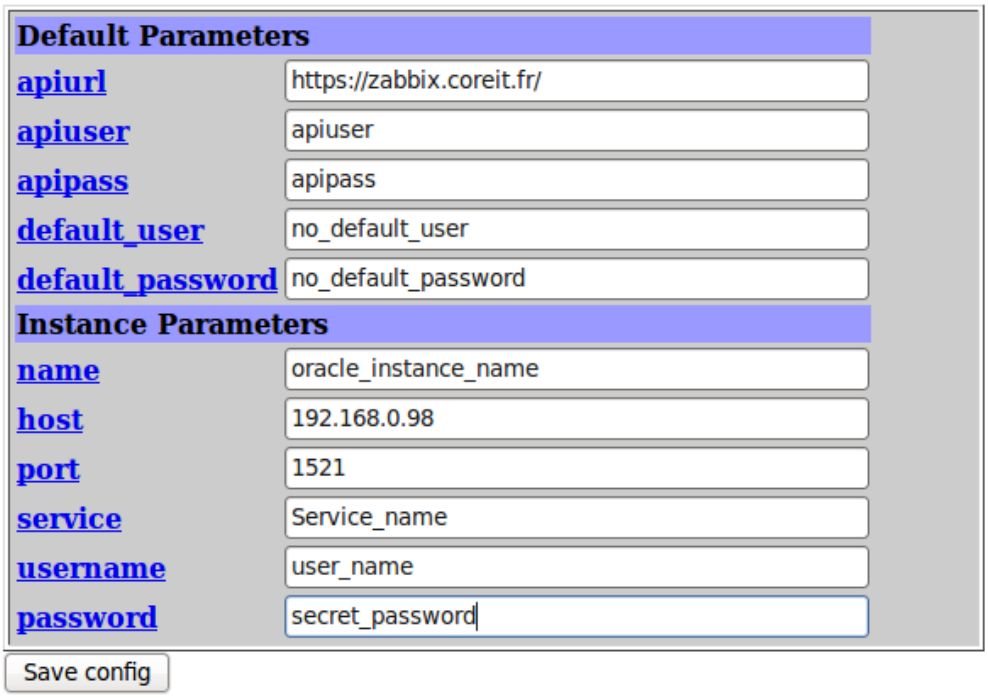
Hosts Configuration
On Zabbix frontend, two macros must be configured on DB2 hosts:
- {$DB2_INSTANCE_NAME} The instance name you entered upper.
- {$DB2_DATABASE_NAME} Name of monitored database.

Online Help

Read Online Help, it will guide you for the Database Monitoring Setup. The Version 1.1 frontend is not able to configure more than one Database Instance, but you can configure the Zabbix Monitoring with ssh connection if you need more.

2.8.2 Configure Oracle Monitoring parameters

Go to zabbix oracle icon and configure the parameters according your Oracle server. Clicking on the name of the parameter will return you an online help.



Templates Configuration
On Zabbix frontend, ORACLE hosts must be configured with one template :
- T_ORACLE_INSTANCE Template that contains ORACLE Instance monitoring.

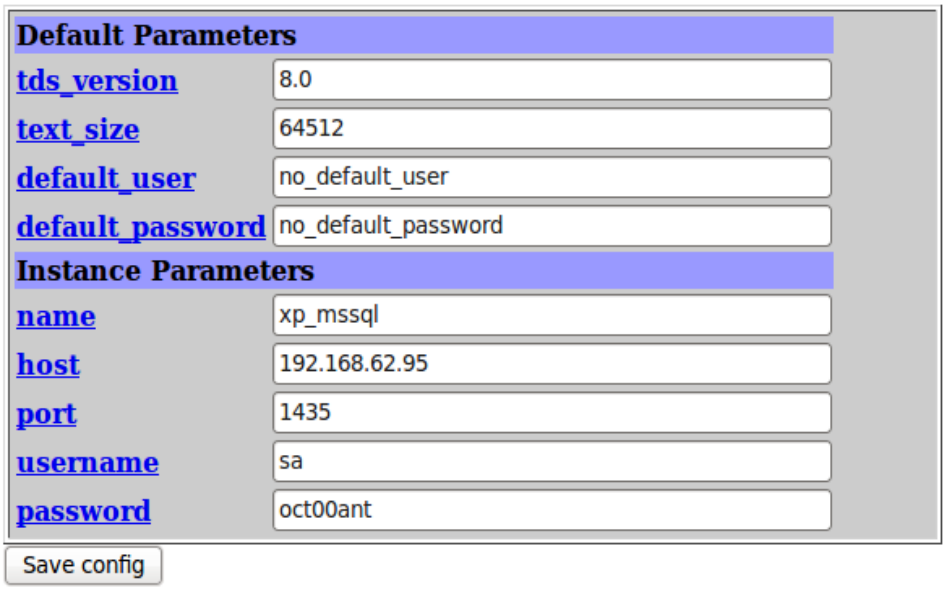
Hosts Configuration
On Zabbix frontend, two macros must be configured on ORACLE hosts:
- {$ORACLE_INSTANCE_NAME} The instance name you entered upper.
- {$ORACLE_ALERTLOGPATH} The alert log path of the SID except if you configure upper fields apiuser, apipass & apiurl; in this case, the alert log path will be discovered automatically.

Online Help

Read Online Help, it will guide you for the Database Monitoring Setup. The Version 1.1 frontend is not able to configure more than one Database Instance, but you can configure the Zabbix Monitoring with ssh connection if you need more.

2.8.3 Configure MS SQL Server Monitoring parameters

Go to zabbix mssql icon and configure the parameters according your MS SQL server. Clicking on the name of the parameter will return you an online help.



Templates Configuration
On Zabbix frontend, MSSQL hosts must be configured with three templates :
- T_MSSQL_DEFAULT_INSTANCE Template that contains perf counters for the default instance.
- T_MSSQL_NAMED_INSTANCE Template that contains perf counters for the named instance.
- T_MSSQL_DATABASE Template that contains MSSQL Database monitoring.

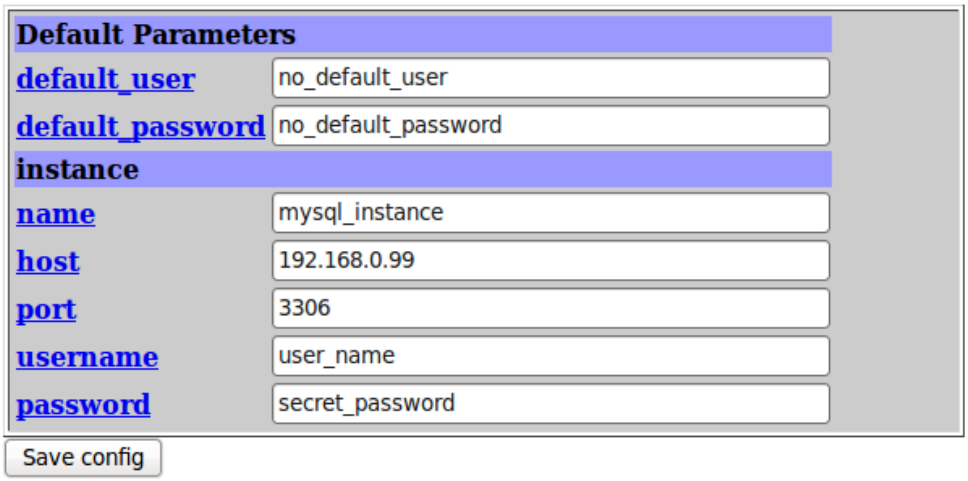
Hosts Configuration
On Zabbix frontend, three macros must be configured on MSSQL hosts:
- {$MSSQL_INSTANCE_NAME} The name of the default instance you entered upper.
- {$MSSQL_DATABASE_NAME} Name of monitored database.
- {$MSSQL_NAMED_INSTANCE_NAME} The name of the named instance (given by item: MSSQL Server Instance Name).

Online Help

Read Online Help, it will guide you for the Database Monitoring Setup. The Version 1.1 frontend is not able to configure more than one Database Instance, but you can configure the Zabbix Monitoring with ssh connection if you need more.

2.8.4 Configure MYSQL Monitoring parameters

Go to zabbix mysql icon and configure the parameters according your MYSQL server. Clicking on the name of the parameter will return you an online help.



Templates Configuration
On Zabbix frontend, MYSQL hosts must be configured with two templates :
- T_MYSQL_INSTANCE Template that contains MYSQL Instance monitoring.
- T_MYSQL_DATABASE Template that contains MYSQL Database monitoring.

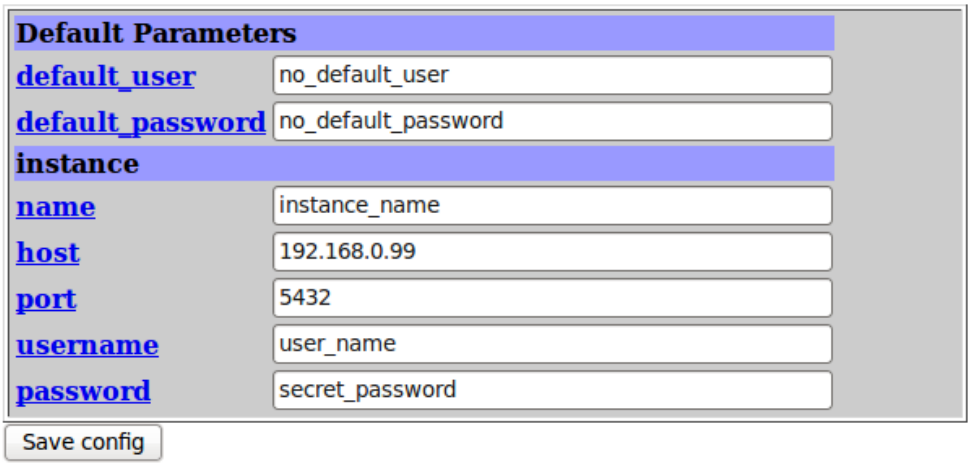
Hosts Configuration
On Zabbix frontend, two macros must be configured on MYSQL hosts:
- {$MYSQL_INSTANCE_NAME} The instance name you entered upper.
- {$MYSQL_DATABASE_NAME} Name of monitored database.

Online Help

Read Online Help, it will guide you for the Database Monitoring Setup. The Version 1.1 frontend is not able to configure more than one Database Instance, but you can configure the Zabbix Monitoring with ssh connection if you need more.

2.8.5 Configure POSTGRESQL Monitoring parameters

Go to zabbix Postgresql icon and configure the parameters according your Postgresql server. Clicking on the name of the parameter will return you an online help.



Templates Configuration
On Zabbix frontend, POSTGRESQL hosts must be configured with two templates :
- T_POSTGRESQL_INSTANCE Template that contains POSTGRESQL Instance monitoring.
- T_POSTGRESQL_DATABASE Template that contains POSTGRESQL Database monitoring.

Hosts Configuration
On Zabbix frontend, two macros must be configured on POSTGRESQL hosts:
- {$POSTGRESQL_INSTANCE_NAME} The instance name you entered upper.
- {$POSTGRESQL_DATABASE_NAME} Name of monitored database.

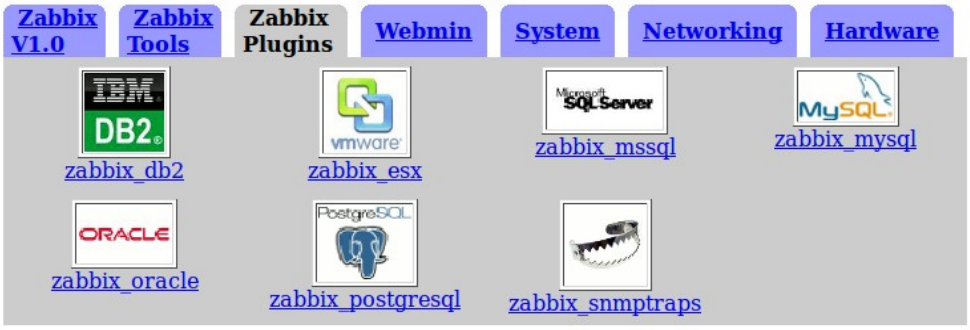
Online Help

Go to zabbix postgresql icon and configure the parameters according your Postgresql server. Clicking on the name of the parameter will return you an online help.

Read Online Help, it will guide you for the Database Monitoring Setup. The Version 1.1 frontend is not able to configure more than one Database Instance, but you can configure the Zabbix Monitoring with ssh connection if you need more.

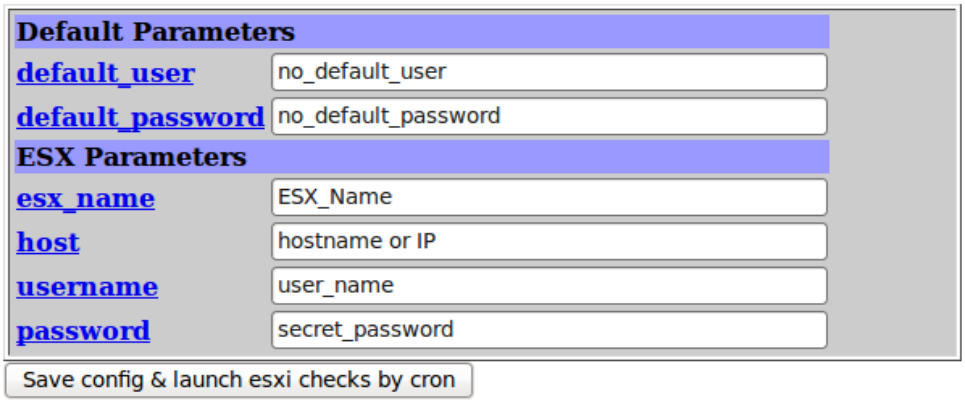
2.9 Configure other Plugins

Go to Zabbix Plugins Tab.



2.9.1 Configure ESX Monitoring parameters

Go to zabbix esx icon and configure the parameters according your ESX server. Clicking on the name of the parameter will return you an online help.



Templates Configuration
On Zabbix frontend, ESX hosts must be configured with one template :
- T-ESX Template that contains ESX monitoring items.

Hosts Configuration
On Zabbix frontend, one macro must be configured on ESX hosts:
- {$VOLUMEx} macros contain the name of the Datastores.

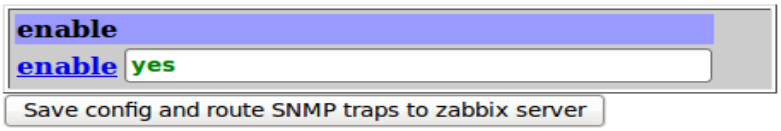
Online Help

Read Online Help, it will guide you for the ESX Monitoring Setup. The Version 1.1 frontend is not able to configure more than one ESX server, but you can configure the Zabbix Monitoring with ssh connection if you need more.

2.9.2 Configure SNMP Traps parameters

Go to zabbix snmptraps icon and enable/disable the SNMP Traps routing to the Zabbix server.

We do recommend to centralize SNMP Traps Analysis directly on the Zabbix Server that is able to dispatch traps among servers (since version 2.0.0), the purpose of this plugin is just the automatic routing according your network (crypted connection or not) to the Zabbix Server.



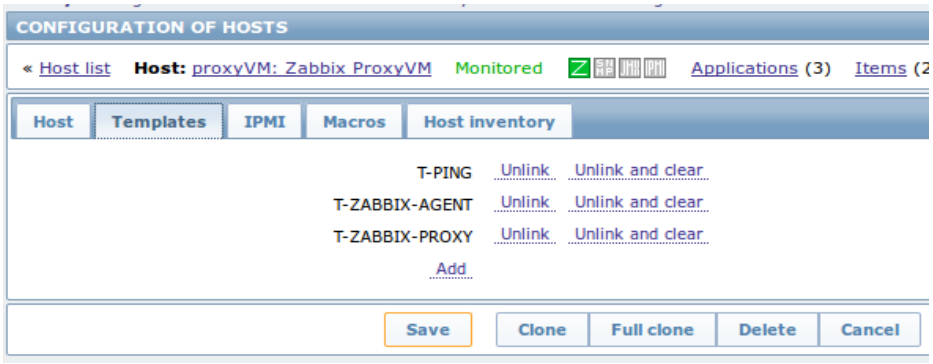
3 TEMPLATES

3.1 Proxy Template

On our public ftp server you will find the template T-ZABBIX-PROXY designed for proxy monitoring, we recommend you configure it for monitoring your proxy, but this is not mandatory.

You can download it on: ftp://ftp.coreit.fr
login: coreit-pub
pass: coreit-pub

On your zabbix frontend, Go the Tab Configuration > HOSTS > Choose the proxy and configure the template from the Templates Tab.



3.2 Other templates

Usage of other templates is explained in Zabbix Plugins paragraphs, you can download them on our public ftp server.

You can download it on: ftp://ftp.coreit.fr
login: coreit-pub
pass: coreit-pub

Templates List:

- T-ESX
- T-ORACLE
- T-ZABBIX-PROXY
- T_DB2_INSTANCE
- T_DB2_DATABASE
- T_MSSQL_DEFAULT_INSTANCE
- T_MSSQL_NAMED_INSTANCE
- T_MSSQL_DATABASE
- T_MYSQL_INSTANCE
- T_MYSQL_DATABASE
- T_POSTGRESQL_INSTANCE
- T_POSTGRESQL_DATABASE

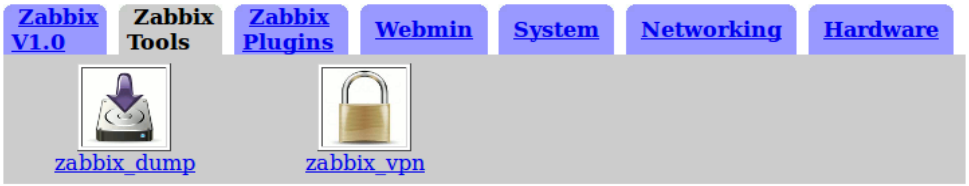
4 TROUBLESHOOTING

In the front of the box, you have 3 leds. Status LEDs are all turned on by the BIOS on power up. The BIOS will turn off LEDs 2 and 3 before booting the operating system, then the first led (first from the left) will blink 2 times every second; other behavior is a malfunction.

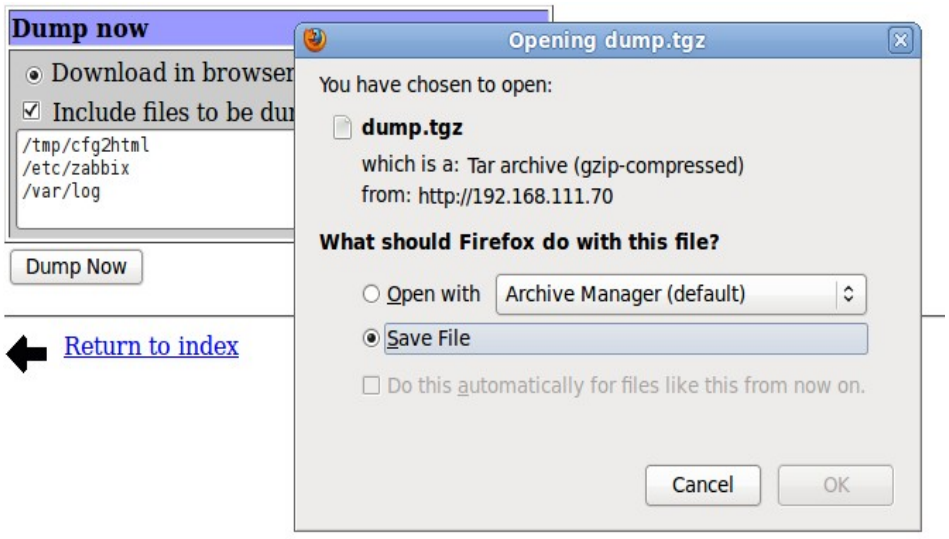
4.1 Dump

For any problem, please report it to Core IT Project support by sending the dump that will be generated as following.

Go to the Zabbix Tools Tab.



Go to zabbix dump Module icon and download the dump to your Desktop from your browser. The dump contains nothing confidential except TCP/IP ergonomy (IP adresses, …), it contains Zabbix configuration, zabbix & system logs and the ergonomy of the VM. You can add some additional files to the dump upon support request.



Please send the dump to support@coreit.fr with a description of the problem.

5 OTHER POSSIBLE CONNECTIONS

Two other kinds of connections, except with frontend, are supported:

- connection via serial console
- connection via ssh

5.1 Console operations

Normally, you do not have to deal with console connection, but in case you loose the IP address of the proxy box, you can connect to the console via a Null modem DB9 cable.

Data rate is configured with 38400 8N1. When you power on the box, you normally see the boot sequence.

To enter setup, type S during the memory test. You should see something like the following:
PC Engines ALIX.2 v0.98j
640 KB Base Memory
261120 KB Extended Memory
01F0 Master 848A CF 2048MB
Phys C/H/S 1002/8/32 Log C/H/S 1002/8/32
…..

5.2 ssh connection

You must connect via ssh for every operation that is not not supported via frontend, for example:

- adding a Debian package
- configuring a zabbix parameter that is not configurable via frontend
- ….

As the filesystems are readonly mounted, you must follow this procedure to post the changes on the readonly Filesystem:

- Connect as root on the proxy.
- Make your changes on the Filesystem.
- Then post your changes on the ro Filesystem.

Example: Change the /etc/inittab to configure a 9600 b/s console rate instead of 38400.
Connect as root onto the proxy.

proxy# vi /etc/inittab
->> proceed with changes (update the line T0:23:respawn:/sbin/getty -L ttyS0 38400 vt100 with T0:23:respawn:/sbin/getty -L ttyS0 9600 vt100)
->> save the file

proxy# remountrw ← *mount the FS as readwrite*
proxy# mv /etc/inittab /ro/etc/inittab ← *post the new inittab onto the readonly FS*
proxy# remountro ← ***re****mount the FS as readonly*

The changes is posted on the ReadOnly Filesystem, you can reboot, changes will not be lost.

If your keyboard layout is not AZERTY, you must at least perform this operation for console keyborad configuration as follow:

- **connect as root**
- **issue the following command: dpkg-reconfigure console-data**
    - **choose the appropriate keyboard layout**

6 CAVEATS AND EXCEPTIONS

Caution, some operations are not yet supported.

- **As the solution is highly embedded with webmin, we strongly discourage you to update webmin.**
- **Normally Debian updates must be supported by the solution but we recommend you test it before**
- **As the filesystems are readonly mounted, we recommend you reboot the box after configurations changes. It does not concern Zabbix modules developped by Core It, each Zabbix configuration change via the frontend is posted on the readonly Filesystem.**

7 ROADMAP

Roadmap
V.0.1 first Major version – October 2012 V.0.x minor versions (corrections & & zabbix new versions)
V.1.0 second Major version – Scheduled on January 2013 – Delayed on February 2013 - larger FS for sqlite database - dump button webmin button - Debian/Webmin Updates - Databases Plugins - Vmaware Plugins - Zabbix new versions - crypted connection between proxy and zabbix server V.1.x corrections versions & zabbix new versions
V.2.0 third Major version – Summer 2014 - Debian/Webmin Updates - Zabbix new versions - V.2.4 Zabbix monitoring

8 SUPPORT

All support requests must be sent by mail at: support@coreit.fr

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